



**Response Action Contract
for Remedial, Enforcement Oversight, and Non-Time
Critical Removal Activities at Sites of Release or
Threatened Release of Hazardous Substances
in EPA Region VIII**

U.S. EPA Contract No. 68-W5-0022

**Remedial Investigation and Removal Action Work Plan for
Riverside Park – Draft RI Results Addendum
Libby Asbestos Site, Operable Unit 4**

September 26, 2003

**Work Assignment No.: 137-RIRI-08BC
Document Control No.: 3282-137-PP-SAMP-XXXXX**

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Work Assignment No.: 137-RIRI-08BC

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9/24/03
Jim -
Here's a copy of the draft
Riverside Park workplan
addendum for your
over-the-shoulder review.
There are a couple of formatting
things that still need to be
done.
Geoff

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Acronyms

bgs	below ground surface
CDM	CDM Federal Programs Corporation
DQO	data quality objective
EPA	U.S. Environmental Protection Agency
ES	embankment sample
FSDS	field sample data sheet
H&S	health and safety
IFF	information field form
LA	Libby amphibole
PCM	phase contrast microscopy
PS	park sample
QC	quality control
Reservoirs	Reservoirs Environmental Services Inc.
RI	remedial investigation
RS	riverbank sample
TEM	transmission electron microscopy
TP	test pit
Volpe	U.S. Department of Transportation Volpe Center
<	less than
µm	micron

Section 1

Introduction

A remedial investigation (RI) was conducted at Riverside Park between September 9 and 15, 2003 in accordance with the Remedial Investigation and Removal Action Work Plan for Riverside Park (CDM Federal Programs Corporation [CDM] 2003a). The purpose of this addendum is to present the RI activities conducted, analytical results, and based on that information, identify boundaries for removal.

Section 2

Remedial Investigation

In accordance with the Remedial Investigation and Removal Action Work Plan for Riverside Park (CDM 2003a), CDM conducted pre-removal characterization activities at Riverside Park. These activities included verbal interviews with city park personnel, visual inspection of the site, and collection of both surface and subsurface soil samples. These activities were completed between September 9 and 15, 2003.

2.1 Verbal Interview

CDM met with Dan Thede, director of Public Services for the City of Libby, on September 15, 2003 to discuss historical use of Riverside Park. An information field form (IFF) was completed during the interview and can be found in Appendix A.

2.2 Visual Inspection

CDM conducted an initial inspection of the site on May 22, 2003. Details regarding that inspection can be found in the remedial investigation and removal action work plan (CDM 2003a). Additional inspections were completed between September 9 and 13, 2003. Vermiculite was observed at several locations within the park, but was generally concentrated in areas on the river side of the former access road that ran through the property including the entire length of the riverbank. Trace to moderate amounts of vermiculite were also observed on the South West side of the embankment (export plant side) of City Service Road. Lastly, an isolated area of vermiculite was located at the bottom of the embankment of West Thomas Street on the east side of Highway 37. All locations of vermiculite found during visual inspections are shown of Figure 2-1. Logbook pages from the work at Riverside Park can be found in Appendix B.

2.3 Soil Sampling

Soil sampling activities occurred between September 9 and 13, 2003, and included both surface soil samples and subsurface test pit samples. All soil samples were collected in accordance with the remedial investigation and removal action work plan (CDM 2003a). Logbook pages can be found in Appendix B and field sample data sheets (FSDSs) can be found in Appendix C. Details regarding this sampling is discussed below.

2.3.1 Surface Soil Samples

Park Samples

Seven surface soil samples were collected within the park (Figure 2-2). All proposed sampling locations were sampled (i.e., no locations needed to be either deleted or moved due to visible vermiculite) and no additional samples were collected. Visible

vermiculite was observed near sample locations (CS-16687 and CS-16688); however, no vermiculite was seen in either sample collected at those locations.

Riverbank Samples

Three surface soil samples were collected along the riverbank on the north side of the park (Figure 2-2). Information regarding the remaining four proposed riverbank samples (RS-1, RS-3, RS-4, and RS-7) is discussed in Section 3.1.

Embankment Samples

Nine surface soil samples were collected on the north and five surface samples were collected on the south side of the embankment of City Service Road between Highway 37 and the entrance to the park (Figure 2-2). Embankment samples were collected at 50-foot intervals as described in the remedial investigation and removal action work plan (CDM 2003a). Figure 2-1 of the work plan showed eight sample locations, however, sampling at 50-foot intervals resulted in fourteen sample locations. Trace to moderate amounts of vermiculite was observed on the South West side of the embankment (export plant side); conversely, no vermiculite was seen on the North East side of the embankment (Riverside Park side).

Thomas Street Samples (TS)

Thomas Street samples have not been collected thus far. The owner has been contacted, but has not responded to grant access to the property.

2.3.2 Subsurface Soil Samples

Test Pit Samples

The eleven proposed test pits were excavated and sampled. All proposed test pit locations were excavated (i.e., no locations needed to be either deleted or moved due to visible vermiculite). The final work plan stipulated that six of the test pits would have a second test pit excavated offset either 50 feet towards the former Export Plant or 30 feet towards the river, depending on whether or not visible vermiculite was encountered in the six test pits. Four of these secondary, offset test pits were excavated. The two remaining secondary test pit locations (TP-2a and TP-5a) were not excavated as proposed. Information about these two sampling locations can be found in Section 3.1.

If visible vermiculite was observed in the test pits, the sampling team noted the observation in the field logbook. Observations regarding visible vermiculite seen in or around test pit excavation locations are presented in Table 2-1. Test pits not included in the table did not have visible vermiculite observed in them.

Table 2-1. Test Pit Observation Details

Sample Location	Details
TP-3	<ul style="list-style-type: none"> ■ Significant vermiculite was observed over the entire boat ramp in the vicinity of this sample location and the parking area adjacent to the northern picnic area. ■ Fine to coarse sandy gravel (road base) with significant vermiculite at 0-5" interval. ■ Significant raw vermiculite at 5-8" interval. ■ No vermiculite observed below 8". ■ No vermiculite observed in sample.
TP-5	<ul style="list-style-type: none"> ■ Fine to medium gravelly sand with significant vermiculite at 0-2" interval. ■ Surface silty sand with significant vermiculite. At 2-6" interval
TP-6	<ul style="list-style-type: none"> ■ A few flakes observed at the 18" interval. ■ Test pit offset 30' toward river ■ Trace amounts of vermiculite observed at 8" bgs.
TP-7	<ul style="list-style-type: none"> ■ Asphalt observed at 0-2" interval. ■ Fine to coarse sandy gravel with significant vermiculite at 2-4" interval. ■ Geotech fabric observed at 4" bgs. ■ Fine to coarse sand with fine to coarse gravel with significant vermiculite at 4-8" interval
TP-8	<ul style="list-style-type: none"> ■ Significant amounts of vermiculite observed at surface. ■ No vermiculite observed below ground surface (bgs).
TP-9	<ul style="list-style-type: none"> ■ Significant amounts of vermiculite observed at 0-6" interval.
TP-11	<ul style="list-style-type: none"> ■ Trace amounts of vermiculite observed at surface. ■ No vermiculite observed bgs.

Color Map(s)

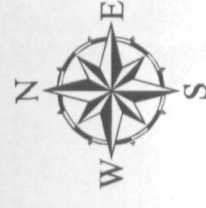
The following pages
contain color that does
not appear in the
scanned images.

To view the actual images, please
contact the Superfund Records
Center at (303) 312-6473.

Figure 2-1
Visible Vermiculite
Location Map
Riverside Park
Libby, Montana

Legend

▲ Location of Visible Vermiculite



CDM

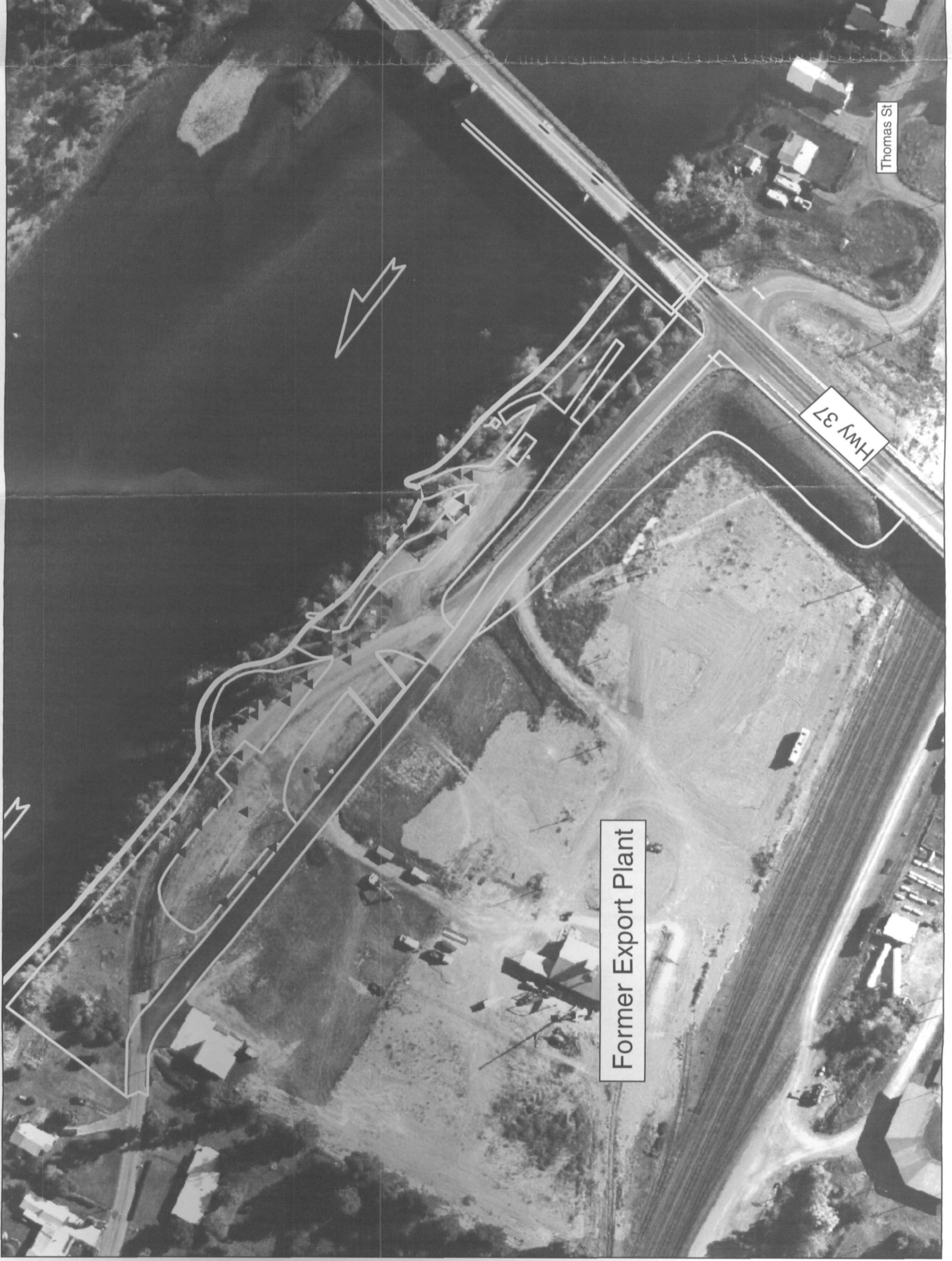
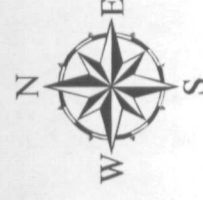


Figure 2-2
Sample Location Map
Riverside Park
Libby, Montana

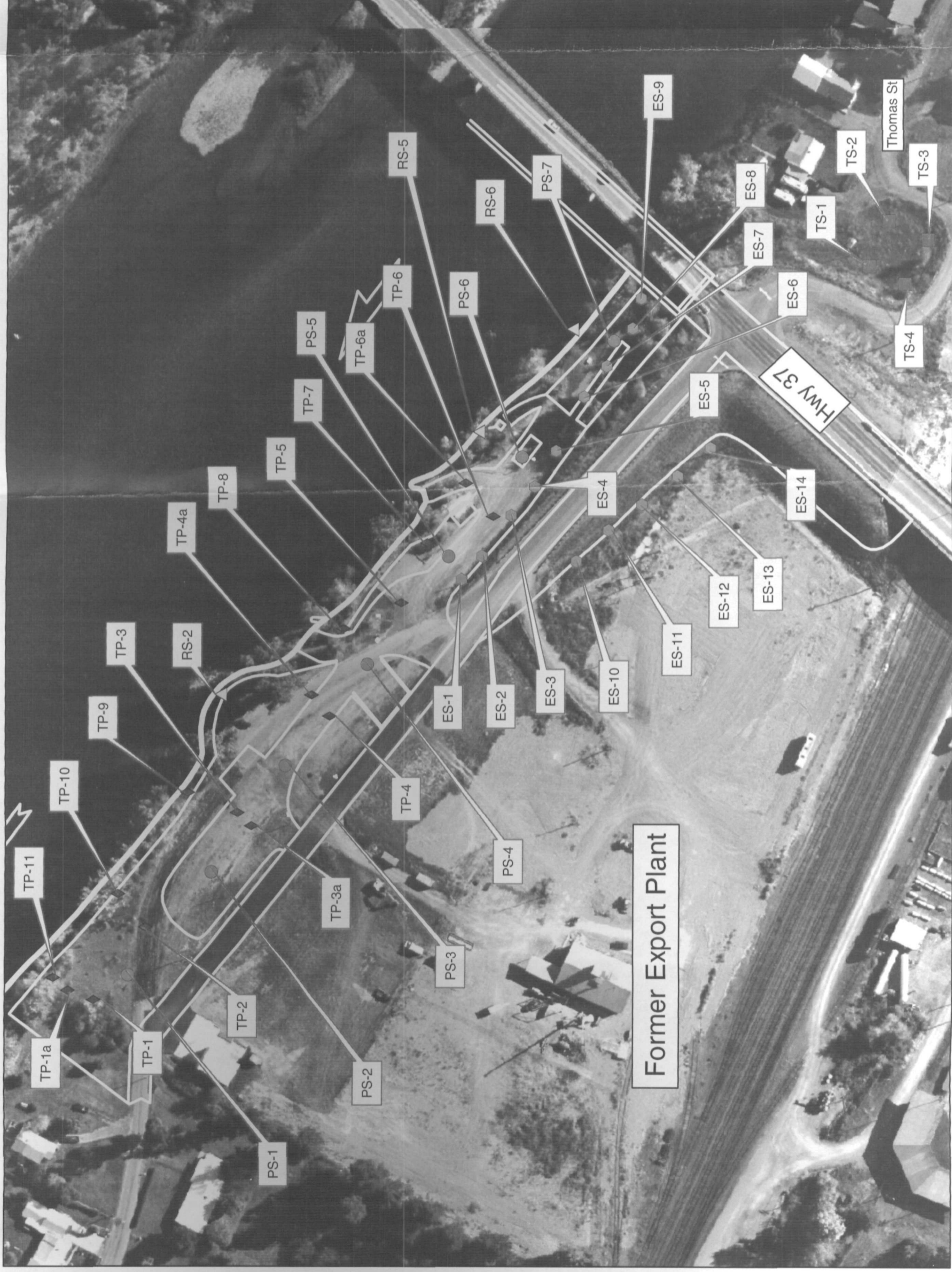
Legend

△	Riverbank Sample
●	Park Sample
◆	Test Pit Sample
◈	Embankment Sample
■	Thomas St Sample



*why is scale different than other
figs, 2*

CDM



Section 3

Quality Assurance

Quality assurance for the remedial investigation sampling at Riverside Park is addressed in the following four subsections: deviations from the sampling and analysis plan, usability of the data, achievement of data quality objectives (DQOs), and summary of quality control (QC) activities.

3.1 Deviations from the Sampling and Analysis Plan

3.1.1 Surface Soil Samples

Park Samples

- Park Sample 4 (PS-4) - vermiculite was observed at the 0 to 6 inch interval in the northern subsample at this sampling location. Therefore, only a 4-point composite, excluding the northern subsample, was submitted for this sample.

Riverbank Samples

- Riverbank Sample 1 (RS-1) - this sample was not collected due to the presence of visible vermiculite at this location.
- Riverbank Sample 3 (RS-3) - this sample was not collected due to the presence of visible vermiculite at this location.
- Riverbank Sample 4 (RS-4) - this sample was not collected due to the presence of visible vermiculite at this location.
- Riverbank Sample 7 (RS-7) - this sample was not collected due to the presence of visible vermiculite at this location.

3.1.2 Subsurface Soil Samples

Test Pit Samples

- Test Pit 2 (TP-2) - the offset test pit (TP-2a) was not excavated at this location due to its proximity to test pit 10.
- Test Pit 3 (TP-3) - the offset test pit (TP-3a) was excavated at a 30-foot interval (towards the road) versus the required 50-foot interval because the marking for a fiber optic line crossed the location of the 50 foot offset interval.

- Test Pit 5 (TP-5) – the offset test pit (TP-5a) was not excavated at this location due to its proposed location (30 ft closer to the river) being in the Kootenai River.

3.2 Usability of the Data

The remedial investigation data were neither evaluated nor validated. Therefore, it is assumed that the raw data are usable for their intended purpose, which is to determine removal objectives for the site, delineate excavation limits of contaminated soils, and develop guidelines for subsequent restoration activities.

3.3 Achievement of Data Quality Objectives

Data Quality Objectives were met and will be discussed in detail in the RI report.

3.4 Summary of Quality Control Activities

Two types of QC samples were collected during this investigation, field duplicate samples and field equipment blanks. Field duplicate samples were collected at a rate of 1 per 20, and field equipment blanks were collected at a rate of one per day. Both types of QC samples were collected in accordance with the CSS SAP Revision 1 (CDM 2003).

All additional QC activities for the Riverside park investigation were completed in accordance with the CSS SAP Revision 1 (CDM 2003b).

Section 4

Results

A sample collection key is presented in Table 4-1. A summary of all sample results is presented in Table 4-2. Detailed bench sheets are included as Appendix D.

Table 4-1. Sample Collection Key

	Sample Location	Index Id	Sample Date	No. of Subsamples	Sample Interval
Riverbank Samples	RS-2	CS-16694	9/9/03	5	0-6 inches
	RS-5	CS-16695	9/9/03	5	0-6 inches
	RS-6	CS-16696	9/9/03	5	0-6 inches
Park Samples	PS-1	CS-16686	9/9/03	5	0-6 inches
	PS-2	CS-16687	9/9/03	5	0-6 inches
	PS-3	CS-16688	9/9/03	5	0-6 inches
	PS-4	CS-16689	9/9/03	4	0-6 inches
	PS-5	CS-16691	9/9/03	5	0-6 inches
	PS-6	CS-16692	9/9/03	5	0-6 inches
	PS-7	CS-16693	9/9/03	5	0-6 inches
Test Pit Samples	TP-1	CS-16698	9/10/03	Grab	36-38 inches
	TP-1a	CS-16842	9/12/03	Grab	36-38 inches
	TP-2	CS-16699	9/10/03	Grab	36-39 inches
	TP-3	CS-16700	9/10/03	Grab	14-16 inches
	TP-3a	CS-16821	9/10/03	Grab	36-38 inches
	TP-4	CS-16835	9/12/03	Grab	36-38 inches
	TP-4a	CS-16836	9/12/03	Grab	36-38 inches
	TP-5	CS-16837	9/12/03	Grab	12-18 inches
	TP-6	CS-16839	9/12/03	Grab	36-38 inches
	TP-6a	CS-16846	9/12/03	Grab	36-38 inches
	TP-7	CS-16845	9/12/03	Grab	14-16 inches
	TP-8	CS-16838	9/12/03	Grab	36-38 inches
	TP-9	CS-16844	9/12/03	Grab	12-14 inches
	TP-10	CS-16843	9/12/03	Grab	36-38 inches
	TP-11	CS-16841	9/12/03	Grab	36-38 inches

Table 4-1. Sample Collection Key (continued)

	Sample Location	Index Id	Sample Date	No. of Subsamples	Sample Interval	Vermiculite Observed
Embankment Samples	ES-1	CS-16848	9/13/03	5	0-6 inches	No
	ES-2	CS-16849	9/13/03	5	0-6 inches	No
	ES-3	CS-16850	9/13/03	5	0-6 inches	No
	ES-4	CS-16851	9/13/03	5	0-6 inches	No
	ES-5	CS-16853	9/13/03	5	0-6 inches	No
	ES-6	CS-16854	9/13/03	5	0-6 inches	No
	ES-7	CS-16855	9/13/03	5	0-6 inches	No
	ES-8	CS-16856	9/13/03	5	0-6 inches	No
	ES-9	CS-16857	9/13/03	5	0-6 inches	No
	ES-10	CS-16858	9/13/03	5	0-6 inches	Yes
	ES-11	CS-16859	9/13/03	5	0-6 inches	Yes
	ES-12	CS-16860	9/13/03	5	0-6 inches	Yes
	ES-13	CS-16861	9/13/03	5	0-6 inches	Yes
	ES-14	CS-16862	9/13/03	5	0-6 inches	No

Table 4-2. Sample Results

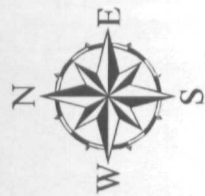
	Sample Location	Index Id	Results
Riverbank Samples	RS-2	CS-16694	ND
	RS-5	CS-16695	ND
	RS-6	CS-16696	ND
Park Samples	PS-1	CS-16686	TR
	PS-2	CS-16687	ND
	PS-3	CS-16688	ND
	PS-4	CS-16689	ND
	PS-5	CS-16691	TR
	PS-6	CS-16692	ND
	PS-7	CS-16693	ND
Test Pit Samples	TP-1	CS-16698	ND
	TP-1a	CS-16842	ND
	TP-2	CS-16699	ND
	TP-3	CS-16700	ND
	TP-3a	CS-16821	ND
	TP-4	CS-16835	ND
	TP-4a	CS-16836	ND
	TP-5	CS-16837	ND
	TP-6	CS-16839	TR
	TP-6a	CS-16846	ND
	TP-7	CS-16845	ND
	TP-8	CS-16838	ND
	TP-9	CS-16844	ND
	TP-10	CS-16843	ND
	TP-11	CS-16841	ND
Embankment Samples	ES-1	CS-16848	TR
	ES-2	CS-16849	ND
	ES-3	CS-16850	TR
	ES-4	CS-16851	ND
	ES-5	CS-16853	ND
	ES-6	CS-16854	ND
	ES-7	CS-16855	TR
	ES-8	CS-16856	TR
	ES-9	CS-16857	TR
	ES-10	CS-16858	<1%
	ES-11	CS-16859	TR
	ES-12	CS-16860	TR
	ES-13	CS-16861	TR
	ES-14	CS-16862	TR

ND – non detect TR – trace <1% - less than 1% LA
Analytical Method - SRC-Libby-03-Rev0, visual estimation
Laboratory – Reservoirs Environmental Services, Inc.

Figure 4-1
Surface Soil Sample Results
Riverside Park
Libby, Montana

Legend

△	Riverbank Sample
●	Park Sample
◆	Embankment Sample



CDM

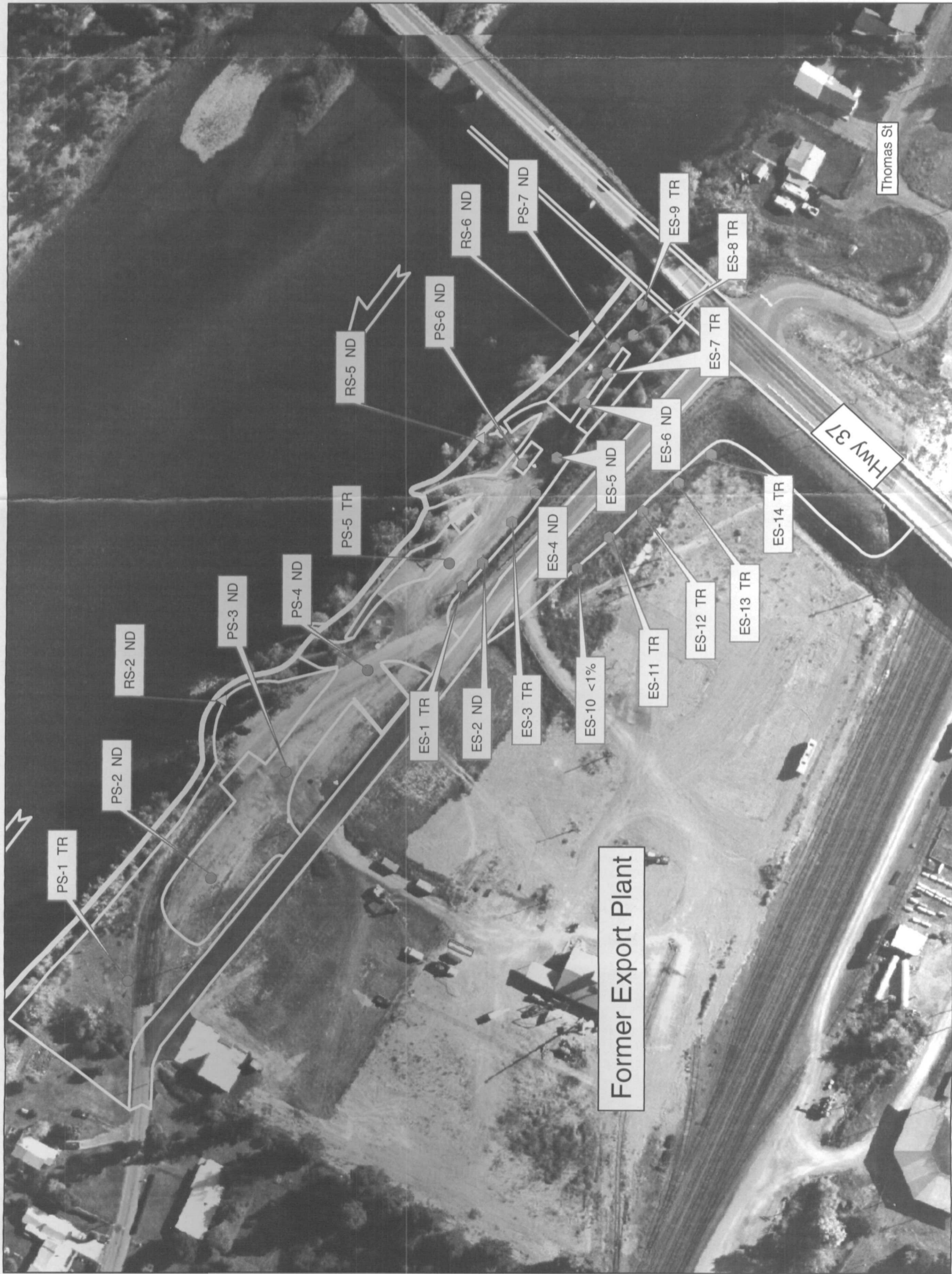
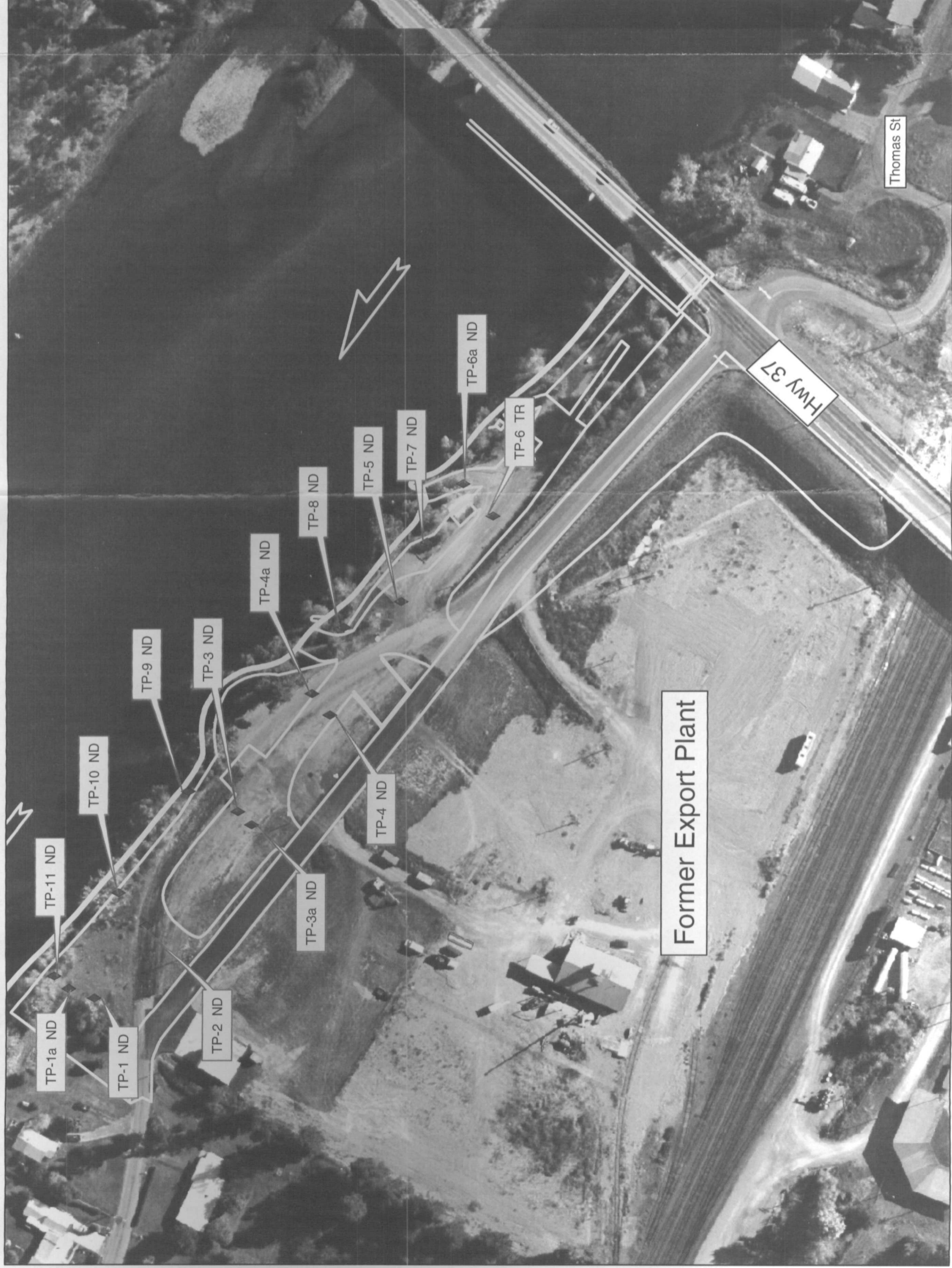


Figure 4-2
Sub-Surface Soil Sample Results
Riverside Park
Libby, Montana



Legend

◆ Test Pit Sample



Feet
0 50 100 200

CDM

Section 5

Findings and Removal Action

A discussion of the findings of the remedial investigation at Riverside Park is presented in Section 5.1 and the resulting excavation limits is presented in Section 5.2. Additional details concerning the approach to restoring the riverbank following excavation of contaminated soils is provided in Section 5.3.

5.1 Findings

The visual inspection of the site indicated that visible vermiculite is pervasive at the surface on the river side of the former access road that ran through the property including the entire length of the riverbank. It was also identified at other locations in the park and on the South West side of the embankment of City Service Road immediately west of Highway 37 (see Figure 2-1).

Surface samples, generally located in areas without visible vermiculite, identified areas with trace to <1% Libby amphibole (LA) asbestos in several locations, including the North West end of the site, the South East end of the site, and along the South West side of the embankment of City Service Road.

Visual inspection of the test pits excavated at the site in areas of surficial visible vermiculite, found that visible vermiculite was located at depths up to 8 inches below ground surface (bgs). Sampling of the test pit soils below the depths of visible vermiculite and in areas without visible vermiculite found no LA asbestos with the exception of Test Pit 6, where a trace of LA asbestos was found.

Based on the visual inspection, and the surface and subsurface sampling discussed above, visible vermiculite and LA asbestos are generally located in the top 6 to 8 inches of soil throughout the Riverside Park site.

5.2 Excavation Limits

Based on the findings of the remedial investigation discussed above, site soils will be excavated in accordance with the final work plan for the site. In general, soils will be excavated to a depth of 12 inches throughout the entire Riverside Park site, except the riverbank and the embankment on the North East side (the river side) of City Service Road. Soil will be excavated at these two locations to a depth of 6 inches. It should be noted that excavation of the embankment on the South West side of City Service Road (the export plant side) will be conducted at a later date, in conjunction with other cleanup in the area. why?

Following the initial excavation cuts, a CDM oversight representative will inspect the excavation to determine if visible vermiculite is still present. If it is, the cleanup construction contractor will be directed to excavate an additional 6 inches of soil until visible vermiculite is no longer observed or until the maximum excavation depth is

reached. Maximum excavation depths will be 3 feet across the site, except for the riverbank and the embankment on the North East side of City Service Road, where it will be 12 inches.

Once excavation is deemed complete by the CDM representative, confirmation sampling will be conducted in accordance with the final work plan, unless significant quantities of vermiculite are still visible at the maximum excavation depths. If this occurs, it will be noted in the field logbook maintained by the CDM oversight representative and the cleanup/construction contractor will be directed to place a geotextile fabric over the area as marker for future excavation work at the site.

During excavation of the riverbank, excavation will be conducted down the slope to the water's edge, or to the bottom of the slope. Excavation will not be conducted in the water or on the relatively flat floodplain areas that exist in some locations above the current elevation of the water. Also, the excavation efforts will include flattening the slope at the top of the bank where feasible, as directed by the CDM oversight representative.

A preliminary estimate of the amount of soil requiring removal from the site is 6,100 cubic yards, based on the estimated area of the site and the planned depths of excavation. This estimate of excavation quantities may increase based on visual observations and sampling during cleanup/construction.

5.3 Site Restoration

The final work plan includes a discussion of the planned restoration of the site. Based on the discussions with the City and observations of the conditions of the riverbank during and following the remedial investigation work, additional details of the riverbank restoration were developed. These details follow.

In general, restoration of the riverbank will include the placement of 6 to 12 inches of topsoil, depending on the amount of soil excavated, followed by dry-seeding of a government-approved seed mix and the placement of an erosion control mat on top of the topsoil. The erosion control mat will not include nylon webbing.

In the area just downstream of the new boat ramp, the City has placed riprap along the toe of the bank. This riprap will be left in place during excavation, and when topsoil is placed on the riverbank, it will be placed within the interstitial spaces of the riprap. This topsoil will be seeded along with the bank above the riprap, but will not be covered with the erosion control mat.

About three-quarters of the way from the new boat ramp to the existing boat ramp, the City has planned to install riprap into the river to slow the velocity of the water in the area of the new boat ramp. The City has already obtained the riprap for this purpose. The cleanup/construction contractor will place this riprap during restoration activities. The configuration of the riprap placed in the water will be coordinated with the City.

Section 6

References

CDM 2003a. Final Remedial Investigation and Removal Action Work Plan for Riverside Park. September

CDM 2003b. Final Sampling and Analysis Plan, Remedial Investigation, Contaminant Screening Study, Revision 1. May

Appendix A

Riverside Park Information Field Form

Appendix B

Riverside Park Logbook Pages

Appendix C

Riverside Park Field Sample Data Sheets

Appendix D

Riverside Park Laboratory Bench Sheets